

Notice of Allowability

Application No.

10/563,085

Examiner

Kevin Mew

Applicant(s)

PALIN, ARTO

Art Unit

2416

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 3/24/2009.
2. ☒ The allowed claim(s) is/are 1-5, 7-15, 18, 20-22, 24-30, which have been renumbered as claims 1-25, respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 6/1/2009.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Detailed Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 3/24/2009 regarding claims 1-5, 7-15, 18, 20-22, 24-30 have been fully considered. Claims 6, 16-17, 19, 23 have been canceled and claims 25-30 have been newly added by applicant. Claims 1-5, 7-15, 18, 20-22, 24-30 are currently pending.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with applicant's representative, Mr. Peter Fill, on 6/1/2009.

The application has been amended for claims 1, 24-26 as follows:

1. (Currently Amended) A method comprising:

defining, at a defining unit, an energy of pilot carriers in a multi-carrier signal in respect of an estimated guard interval position of said signal, and

based on said energy, selecting a position for a time domain to frequency domain transform window of said signal, wherein the selecting is based on an energy ratio between energy sample inside the estimated guard interval position and energy sample outside the estimated guard interval position.

24. (Currently Amended) A method for receiving an OFDM radio signal, comprising the steps of:

(a) receiving said signal,

(b) selecting, at a selection unit, an initial position for a FFT-window of said signal in accordance with a coarse timing,

(c) performing FFT to said initial position to obtain a first output,

(d) extracting scattered pilots from said first output to obtain a second output,

(e) performing a linear time interpolation for said second output,

(f) performing IFFT for the time interpolated scattered pilots for obtaining a channel impulse response (CIR),

(g) estimating energy based on the CIR,

(h) keeping track on used trial positions with said energy,

(i) changing FFT-window position in accordance with a predefined scheme until predefined amount of trial positions for said FFT-window have been applied,

(j) selecting a FFT-window from said trial positions,
(k) performing a time interpolation for the scattered pilots based on the selected
FFT-window,

- (l) performing IFFT for the time interpolated scattered pilots, and
(m) fine tuning the selected FFT-window in accordance with the IFFT.

25. (Currently Amended) A method, comprising:

defining, at a defining unit, an energy of pilot carriers in a multi-carrier signal in respect
of an estimated guard interval position of said signal, and

based on said energy, selecting a position for a time domain to frequency domain
transform window of said signal, wherein said selecting is based on energy outside the estimated
guard interval position having the minimum.

26. (Currently Amended) A method, comprising:

defining, at a defining unit, an energy of pilot carriers in a multi-carrier signal in respect
of an estimated guard interval position of said signal,

based on said energy, selecting a position for a time domain to frequency domain
transform window of said signal wherein said selecting is based on energy inside the estimated
guard interval position having the maximum.

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

3. The following is an examiner's statement of reasons for allowance:

The present application relates to providing a method and a receiver for receiving an OFDM multi-carrier signal, including the unique steps of:

“based on said energy, selecting a position for a time domain to frequency domain transform window of said signal, wherein the selecting is abased on an energy ratio between energy sample inside the estimated guard interval position and energy sample outside the estimated guard interval position.”

The closet prior art, Foxcroft et al. (WO 01/69878 A1), discloses a method receiving a multi-carrier signal where energy that exists in some or all of the unused carriers can be placed within or outside the guard interval and it correctly positions FFT window location based on no additional energy being found in the unused carrier positions. However, Foxcroft fails to anticipate or render obvious the above quoted limitations of the present application. This renders the claims allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chi H Pham/
Supervisory Patent Examiner, Art Unit
2416

/K. M./
Examiner, Art Unit 2416